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# INSTALLATION RESTORATION PROGRAM

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Final  
**DECISION DOCUMENT**  
**UST SITE 120**

117th Refueling Wing  
Alabama Air National Guard  
Birmingham Airport  
Birmingham, Alabama

January 1997



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**INSTALLATION RESTORATION PROGRAM**

**DECISION DOCUMENT  
SITE UST 120**

**117 AIR REFUELING WING  
ALABAMA AIR NATIONAL GUARD  
BIRMINGHAM AIRPORT  
BIRMINGHAM, ALABAMA**

**Submitted to:**

**AIR NATIONAL GUARD READINESS CENTER  
ANDREWS AIR FORCE BASE, MARYLAND**

**Modified and Submitted by:**

**HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM  
MARTIN MARIETTA ENERGY SYSTEMS, INC.  
OAK RIDGE, TENNESSEE**

**for the  
U.S. DEPARTMENT OF ENERGY  
UNDER CONTRACT NO. DE-AC05-840R21400**

**Prepared by:**

**CH2M HILL, INC.  
MONTGOMERY, ALABAMA**

**JANUARY 1997**

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## ACRONYMS

AANG	Alabama Air National Guard
ADEM	Alabama Department of Environmental Management
ANG	Air National Guard
ANGRC	Air National Guard Readiness Center
DOD	Department of Defense
DOE	Department of Energy
HAZWRAP	Hazardous Waste Remedial Actions Program
IRP	Installation Restoration Program
NFAR	No Further Action Required
NGB	National Guard Bureau
PA/SI	Preliminary Assessment/Site Investigation
ppb	parts per billion
ppm	parts per million
RCRA	Resources Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SI	Site Investigation
TCLP	Toxicity Characteristic Leaching Procedure
TPH	Total Petroleum Hydrocarbon
UST	Underground Storage Tank

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## EXECUTIVE SUMMARY

As part of the Installation Restoration Program (IRP), the Air National Guard Readiness Center (ANGRC), previously known as the National Guard Bureau (NGB), and Alabama Air National Guard (AANG) requested field observation and sampling during the removal of Underground Storage Tank (UST) 120. The investigation was begun to determine the presence or absence of contamination and the risk to public health and environment, if any, associated with past operations at this site.

This document was prepared to review the available data, to evaluate alternative actions, to make recommendations concerning future actions, and to fulfill the requirements and objectives of the National Environmental Policy Act.

UST 120 was removed in January 1991. No soil staining or fuel odor were observed during trenching around the tank for soil sampling. The tank was observed to have corrosion on the top of the western end upon removal.

The results of laboratory analysis of samples collected from the soil next to the tank indicate that the remaining soil contains detectable levels of total petroleum hydrocarbons (TPHs). One laboratory sample indicated a level of TPH greater than the Alabama Department of Environmental Management's (ADEM's) criteria of 100 parts per million (ppm).

Upon review of the closure report, ADEM issued a letter in October, 1991 stating that it would not require further action at this site. Therefore, because it is impractical to remediate the contaminated soils, and the relatively low concentrations of contamination are not likely to travel far in the clayey soils, it is recommended that this site be removed from further IRP activities and that no further action be required.

## 1. INTRODUCTION

The objectives of the Decision Document are to present the history of Underground Storage Tank (UST) 120 at Birmingham's Alabama Air National Guard (AANG) facility to discuss observations made while excavating the tank, to identify and evaluate control measures, and to present conclusions and decisions about the disposition of each UST site. Decisions are based on regulations set forth in the site investigation (SI) work plan dated November 1989.

Figure 1 shows the general location of the Birmingham AANG facility. Figure 2 shows the specific location of UST 120 on the base. Evaluations are based on criteria set forth in the Site Investigation Work Plan, Alabama Air National Guard (CH2M HILL, Inc., November 1989).

## 2. BACKGROUND

### 2.1 PROGRAM BACKGROUND

The Air National Guard Readiness Center (ANGRC), through the Air National Guard (ANG), initiated an Installation Restoration Program (IRP) in response to the policies of the Department of Defense (DOD). The IRP was developed as a phased program for identifying and addressing environmental contamination caused by past practices at ANG installations.

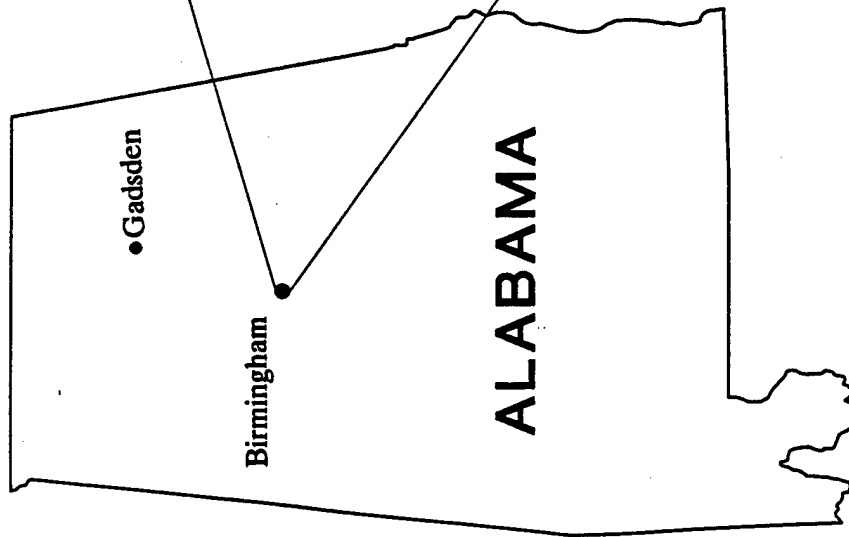
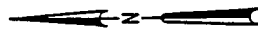
The ANGRC entered into an interagency agreement with the Department of Energy (DOE), under which the DOE will provide technical assistance for implementing the IRP. The Hazardous Waste Remedial Actions Program (HAZWRAP), as a DOE contractor, is responsible for managing this effort under the interagency agreement.

The IRP, along with other national hazardous waste cleanup programs, follows the terminology and procedures of the National Contingency Plan:

- PA/SI Preliminary Assessment/Site Investigation
- RI/FS Remedial Investigation/Feasibility Study
- RD/RA Remedial Design/Remedial Action

This Decision Document is written to provide the basis for the decision not to do any further work. The UST was removed during the SI implemented through the IRP.





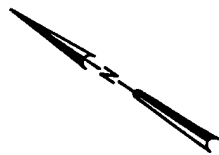
# VICINITY MAP

N.T.S.

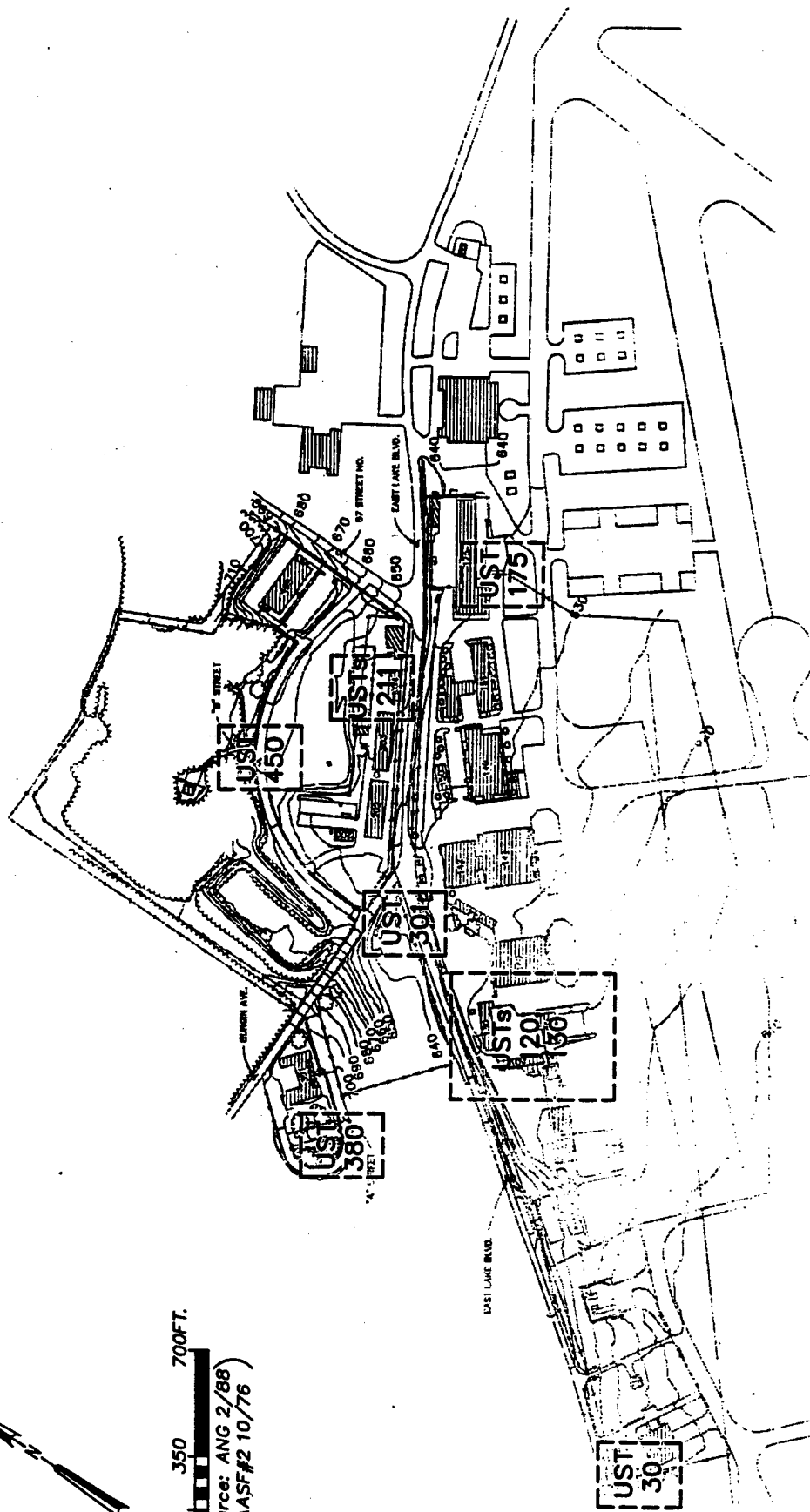


# LOCATION MAP

1 MILE



0 350 700 FT.  
 (Source: ANG 2/88  
 AASF #2 10/76)



## **2.2 SITE DESCRIPTION**

The 117th Tactical Reconnaissance Wing is located next to and north of the Birmingham Municipal Airport, Birmingham, Alabama. This AANG installation has been active at its present location since 1938. Through the years, the base has had several missions, with past and present operations involving the use of USTs for containment of heating fuels, diesel fuels, and jet propulsion fuels.

UST 120 was a 1,400-gallon fuel storage tank adjacent to the fire station at the AANG facility. Tank age could not be determined from base records, but the estimated last use was in 1972. The tank was suspected to have contained diesel fuel and was removed in January 1991. Figure 3 presents the UST 120 site map.

## **2.3 ENVIRONMENTAL SETTING**

### **2.3.1 Geology**

The bedrock beneath the Base consists of the Ketona Dolomite and Knox Group. A mottled-colored cherty clay residuum, resulting from the dissolution of the bedrock, overlies dolomites of these units and averages 30 feet in thickness over the base. Some areas of the Base have visible outcrops of dolomite and chert boulders which are isolated in the clay residuum; chert float can be seen at the surface base-wide.

The residual cherty clays are generally homogeneous, although slight changes in the amount of chert, plasticity and stiffness are present. Dolomitic sand lenses are gravelly clays are present, generally occurring at the contact of clay and bedrock.

### **2.3.2 Hydrogeology**

The uppermost aquifer at the Base is the Knox aquifer. The top of the aquifer is the saturated permeable interface between the residual clay and the bedrock. The clay materials above the bedrock are also generally saturated at shallow depths, 10 to 15 feet below land surface. These clays generally do not yield significant quantities of water.

The direction of groundwater flow in both the clay residuum and the Knox is to the south; a downward vertical component exists in the clay residuum. Data from slug testing of monitoring wells completed in the clay indicate an average hydraulic conductivity of  $9.02\text{E-}4$  ft/day. Because of the low permeabilities exhibited by the residual clays, lateral transport is inhibited.

### **2.3.3 Water Utilization**

Drinking water in the Birmingham is provided by city/county utilities from surface water sources. The municipal water source nearest the Base is the Cahaba River, located approximately 20 miles to the east. Residences adjacent to the Base have been served by the municipal water system for about 60 years.

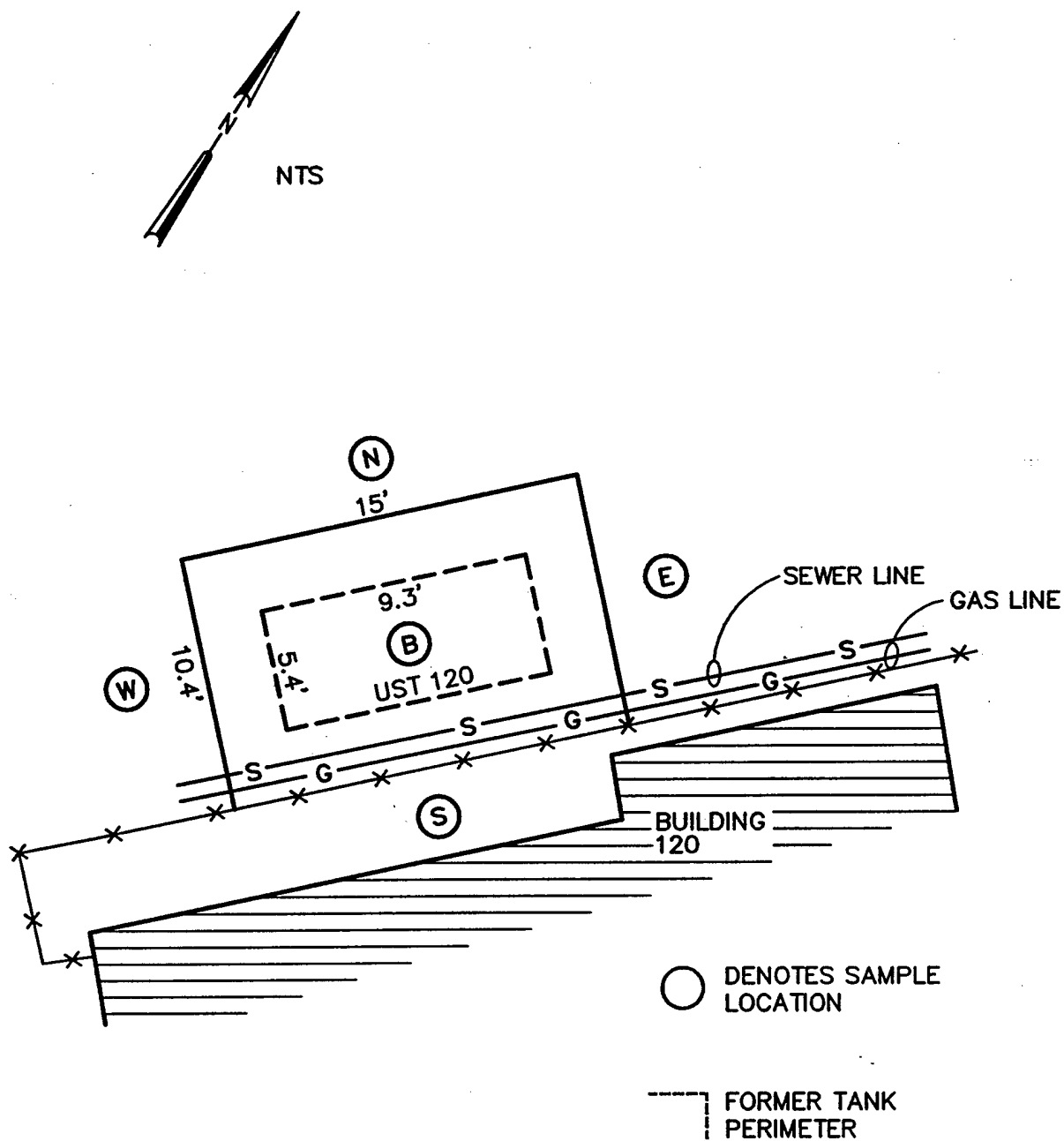
## 2.4 TANK REMOVAL OBSERVATIONS

A program to evaluate abandoned USTs at Birmingham's AANG facility included identifying abandoned tank locations, sampling tank contents, preparing tank removal plans and specifications, removing tanks and contaminated soil, and evaluating investigation-derived wastes after the removal effort was complete.

The tanks were removed during January 1991. Soil samples were taken from the bottom one-third of the excavation at the UST 120 site from each of the four side walls, the pit bottom, and the spoil pile generated during the process in accordance with the SI Work Plan and the Alabama Department of Environmental Management's (ADEM's) UST regulations and guidance. Field screening tests (headspace readings) were conducted with a photoionization detector, manufactured by HNu Systems, to indicate contamination and estimate the extent of total petroleum hydrocarbon (TPH) present in the soil. Soil samples were placed in glass jars and covered with foil to create a headspace in the top half of the jar. The HNu probe was inserted through the foil cover into the headspace above the soil approximately 5 minutes after sampling to indicate if TPH was present in the soil sample. When excessive readings were obtained with the HNu, additional excavation was conducted. These soils were removed from the open pit and placed in the spoil pile on AANG facility grounds.

Analytical samples were collected from the same locations as the field screening samples within the pit once all excavation was complete. These laboratory soil samples were analyzed for TPH (EPA Method 418.1), total lead (EPA Method 7421), and ignitability (EPA Method 846[1C]).

UST 120 appeared to be in good condition upon removal, although it had holes on the top of the western end. A septic odor was detected in the top 30 inches of soils removed from the tank pit. These odors were assumed to be the direct result of a clay field drain found on the southern edge of the excavation. No other soil staining or odors were observed during tank removal.



HNu HEADSPACE READING	
LOCATION	(ppm)
120-N	9.4
120-S	15.8
120-E	6.8
120-W	7.4
120-B	6.6
120-SP	20.0

**FIGURE 3**  
**UST 120 SITE MAP**  
 Alabama Air National Guard, Birmingham, Alabama



The soil in the UST pit was a reddish-orange clay with intermittent rock fragments. These clays were overlain by 18 inches of rock fill plus asphalt pavement. Moisture in the soils increased with depth, but the static water table is believed to be deeper than the pit bottom (9.5 feet).

Field screening tests (headspace readings) for the soils remaining in the excavation did not indicate soil contamination, and the excavation was backfilled. No soil was removed from the excavation for offsite disposal.

ADEM regulations for soils remediation at UST sites, as described in the SI work plan, limited TPH to 100 parts per million (ppm) for soil samples.

Total lead concentrations of 5 mg/kg also were considered a remedial action criteria. If total lead concentrations are below 5 mg/kg, then no action is required. If the total lead concentrations are higher than the 5 mg/kg limit, then a toxicity characteristic leachate procedure (TCLP) lead analysis is required to determine if the soils need to be managed as a hazardous waste.

ADEM criteria led to the following soil disposition criteria:

- Visually stained soil was removed to the soil staging area for remediation by aeration.
- Soils containing less than 5 mg/kg lead and less than 100 ppm TPH (analytically) were used as general fill material on the AANG grounds.
- Soils containing more than 100 ppm TPH were aerated onsite in aeration beds until TPH levels were below the 100 ppm TPH limit.

Laboratory analyses indicate that the soil contains detectable levels of fuel component organic compounds. Table 2.1 shows the results of the TPH analyses conducted at the laboratory.

In addition to the TPH analyses, the west wall sample was analyzed for total lead and resulted in a lead concentration of 16.2 mg/kg. A subsequent analysis for TCLP lead resulted in a value of 22  $\mu\text{g/L}$ . Also, the spoil pile was analyzed for ignitability and was found to be non-ignitable.

Soils that had TPH concentrations greater than the 100 ppm TPH limit and that were excavated are being remediated by aeration. TCLP lead levels are below Resource Conservation and Recovery Act (RCRA) regulatory limits for management as a hazardous waste. Thus, once soils are remediated, they will be used as general fill on the AANG property.

Table 2.1. Total Petroleum Hydrocarbons - UST 120 Pit	
Soil Sample Location	TPH Concentration (ppm)
UST North Wall	3.2
UST South Wall	4.7
UST East Wall	9.2
UST East Wall Duplicate	209
UST West Wall	28.6
UST Spoil Pile	27.6
UST Spoil Pile Duplicate	472

On the basis of a well and spring inventory conducted during the SI, potential groundwater receptors are more than 1 mile from the Birmingham AANG UST 120 site.

### 3. CONTROL MEASURES

Control measures are addressed in this section of the Decision Document to consider the potential for adverse effects that could be caused by contaminants remaining at the UST 120 site.

#### 3.1 SCREENING

Potential control measures used to manage the UST 120 site were screened to develop a technically feasible and reliable solution about the status of the former UST 120 site. The following criteria were used to identify and screen potential control measures for the former tank site.

- Known characteristics of the UST 120 site
- ADEM remedial criteria
- Technical feasibility of the control measure to safeguard human health and the environment

### 3.2 IDENTIFICATION

The following control measures were identified as possible alternatives using the screening criteria to meet the objectives of the IRP:

- Recommend monitoring groundwater
- Recommend remedial investigation (RI)
- No further action required (NFAR)

### 3.3 EVALUATION

The soils removed at the UST 120 site contained TPH levels showing that fuel components were a direct result of materials contained in UST 120. The majority of the soils remaining in the former UST 120 location indicate that a minor amount of petroleum-contaminated media exists (see Table 2.1). A soil sample analyzed for total lead yielded a concentration of 16.2 mg/kg. A subsequent analysis for TCLP lead resulted in a value of 22  $\mu\text{g/l}$ .

On the basis of a review of the data, discussions with ADEM, the limited mobility of contamination in fine-grained soils, and the fact that groundwater receptors are more than 1 mile away, groundwater monitoring is not currently recommended. A remedial investigation is not warranted because the data do not indicate that contamination requiring remedial action exists.

Upon review of the UST Closure Assessment Report, ADEM issued a letter in October, 1991 stating that no further investigative or corrective action will be required by the agency at this site. This correspondence is included in the Appendix.

## 4. CONCLUSIONS

Past operations at the UST 120 site led to this investigation because of possible soil and water contamination. Analytical results from soil samples obtained during this investigation indicate that the soil contains fuel component organic compounds. Soils found within the excavation pit were found to have TPH concentrations greater than ADEM's criteria of 100 ppm. TCLP lead levels are below RCRA regulatory limits for management as a hazardous waste.



On the basis of recommendations from ADEM and because of the limited exposure risk, it is recommended that this site be removed from further IRP activities and that no further action be taken.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**DAVID C. VAN GASBECK**  
Chief, Environmental Division  
Air National Guard Readiness Center

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Alabama Department of Environmental Management**

**Appendix**  
**ADEM Response to Closure Assessment Report**

# ADEM

## ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT



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FAX 479-2593

Mr. William J. Copeland, P.E., Lt. Col.  
Alabama Air National Guard  
East Lake Boulevard  
Birmingham, Alabama 35217-3595

Dear Colonel Copeland:

RE: Birmingham MAP (ANG) 117th Recon., UST 120, East Lake Boulevard,  
Birmingham, Jefferson County, Alabama  
NOT REGISTERED

The Department has reviewed the underground storage tank closure assessment for the referenced site. As a result of this review it is determined that no further investigative or corrective actions will be required for this site at this time.

Please use a complete reference line in all future correspondence, including Facility Identification Number, name, address, and Incident Number (UST - - ), where applicable. Sites that are not registered will not have an Identification Number and should be labeled (NOT REGISTERED). Because our filing system is dependent on the use of the Facility Identification Number, we may have to return correspondence and reports that do not provide this information.

If there are any questions, please contact me at 205/270-5642.

Sincerely,

David M. Lovoy  
Hydrogeologist  
Groundwater Branch  
Water Division

DML/kmh

